PONY

سلسلة كتب الأستاذ

ICT

October Revision

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2nd Preparatory

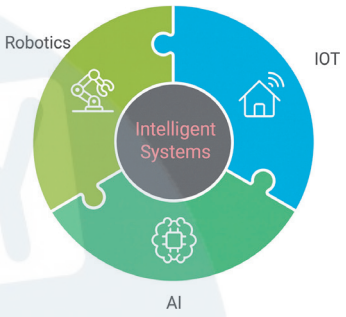
First Term

October Revision ① Summary

Lesson 1 Intelligent Systems and Their Impact on Climate Change:

1 Interconnected Intelligent Systems: It combines three important technologies

1. IoT: connects devices to the internet.
2. AI: analyzes information and makes decisions like humans.
3. Robotics: devices that move and perform tasks.



2 Example on Smart Car Breakdown:

1. IoT: sends location and problem data to a service center.
2. AI: analyzes the cause and suggests solutions.
3. Robotics: repairs the car or requests a transport vehicle.

3 Practical Applications in Daily Life:

- Smart Home: IoT controls devices, AI predicts needs, robots clean and assist.
- School Robot: IoT connects to resources, AI answers questions, robot communicates.
- Smart Farming: IoT monitors soil, AI analyzes, robots irrigate or spray pesticides.
- Voice Assistant: IoT accesses info, AI understands speech.
- Smart Car: IoT connects to maps, AI monitors hazards, robots control movement.

4 Impact on Climate Change:

Global Warming: IoT measures pollution, AI suggests solutions, robots plant trees/purify air.

Air Pollution: IoT monitors gases, AI identifies areas, robots use air purifiers.

Water Shortage/Drought: IoT measures soil, AI calculates water, robots irrigate efficiently.

Floods: IoT measures rainfall, AI sends warnings, robots assist in rescue.

Melting Ice: IoT monitors melting, AI predicts risks, robots collect data and support prevention.

Lesson 2 Advanced Cyber Threats

- These are not simple viruses, but planned attacks that exploit system vulnerabilities or user behavior.

1 Ransomware:

- A type of malware that encrypts files or locks devices and demands ransom money to restore access.
- It spread through suspicious emails, malicious links, fake websites, or untrusted downloads.

2 Advanced Social Engineering:

- Not a hack of systems, but a hack of minds
- It Tricks people into giving confidential information.

Spear Phishing: Personalized fake emails or messages targeting specific individuals or organizations

Pretexting: Attacker creates a fake story (e.g., pretending to be bank staff or technical support).

Baiting: Offering something attractive (like a free USB drive with malware).

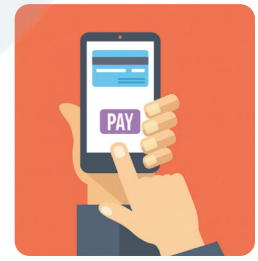
3 Distributed Denial of Service (DDoS) Attacks:

- Attackers use many botnets (infected devices) to access a website at the same time.
- The website becomes slows down or disabled.
- This prevents legitimate (real) users from accessing it.

Lesson 3 Big Data

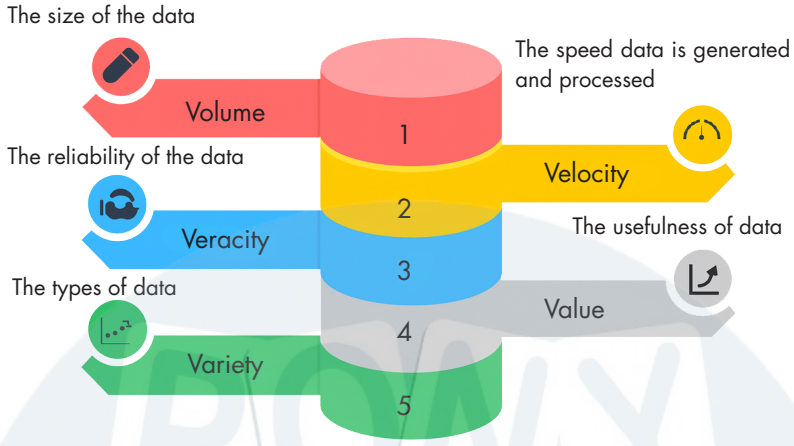
- Large and complex data that cannot be processed efficiently using traditional tools (like Excel).
- Sources of Big Data:

1. Internet-connected devices (IoT): Smart watches, refrigerators, cars collect usage, location, and activity data.
2. Social Media: Posts, comments, photos, videos, likes generate massive data (sometimes unreliable).
3. Financial Data: Payments, transactions, and stock trading record amounts, users, times, and locations.



4. Smart Devices: Phones, cameras, and smart home devices track location, apps, and interactions.
5. Digital Content: Videos, images, and audio generate data from views, comments, and shares.
6. Government Data: Population registers, censuses, taxes, surveys.
7. Geographic and Spatial Data: Satellites and GPS provide maps, traffic, and environmental data.

The 5Vs of Big Data:



Types of Big Data:

Structured Data: Organized in tables with rows and columns. (e.g., customer data, transactions).

Unstructured Data: No clear structure; includes text, images, videos, social media posts.

Semi-Structured Data: A mix of both; such as emails (structured parts like sender, recipient / unstructured like message body).

October Revision 2 Questions

1 Choose the correct answer:

1 ..... technology allows smart devices to connect and exchange data automatically.

a. AI b. Robotics c. IoT d. VR

2 What is the main role of AI in smart systems like homes and cars?

a. Transfer data. b. Analyze data.
c. Device making. d. Power the Internet.

3 Systems that combine IoT, AI, and robotics to work autonomously are called ..... .

a. traditional b. manual
c. mechanical d. intelligent systems

4 How can smart systems help reduce pollution?

a. By increasing vehicle exhausts.
b. By ignoring the problem.
c. By shutting down all factories.
d. By monitoring air quality and suggesting

5 Robotics in intelligent systems is mainly responsible for ..... .

a. performing tasks b. connecting devices
c. analyzing data d. sending messages

6 In smart farming, the system can water crops and spray fertilizers automatically using ..... .

In smart farming, ... perform watering plants and fertilizing crops.

a. IoT b. robotics c. manual d. both a and b

7 Education robots can ..... .

a. speak only b. write only
c. interact with students d. replace teachers

8 Which of the following is not an advanced cyber threat?

a. Bookmarks b. DDoS

c. Ransomware d. Social engineering

9 Ransomware demands ..... to unlock your files.

a. passwords b. money c. software d. updates

10 Spear phishing is a type of attack that ..... .

a. randomly hacks

b. targets specific individuals or organizations

c. has a virus only

d. is a hardware

11 Which of the following is not a social engineering threat?

a. Pretexting b. Baiting c. Firewall d. Spear phishing

12 DDoS attacks usually rely on ..... to attack a website.

a. super computers b. botnets c. antivirus d. routers

13 Advanced cyber threats can spread through ..... .

a. trusted sites b. malicious links

c. official apps d. emails only

14 Security measures against cyber threats include ..... .

a. ignoring emails

b. regular updates and antivirus software

c. deleting files

d. opening the Wi-Fi

15 Big data refers to ..... that cannot be processed using traditional tools.

a. small files b. Excel only c. large datasets d. USB

16 Which of the following is a major source of big data?

a. Devices b. Social media

c. Government d. All of them

17 The 5Vs of big data include ..... .

a. volume b. velocity c. variety d. all of them

18 The data stored in tables with rows and columns is called ..... .
a. audio b. structured c. streams d. images

19 Semi-structured data include ..... .
a. Excel b. emails c. images d. text only

20 Smart home automation works efficiently because it uses ..... together.
a. AI b. IoT sensors
c. robotics d. all of them

21 In smart cars, which component sends the location and breakdown information to a maintenance center?
a. GPS b. IoT c. Robotics d. AI

22 Traffic data collected by Google Maps is ..... .
a. financial data b. Gov data c. spatial data d. digital content

23 In the 5Vs of big data, which 'V' refers to the massive amount of data?
a. Velocity b. Variety c. Value d. Volume

24 The number of views and comments on a YouTube video is considered ..... .
a. financial data b. digital content
c. IoT data d. governmental data

25 Government data includes ..... .
a. censuses b. taxes c. statistics d. all of them

26 Population census is an example of ..... .
a. social media b. governmental data
c. GPS d. financial data

27 ..... in the 5Vs of big data refers to the speed of data.
a. Variety b. Velocity c. Volume d. Value

28 Advanced cyber threats target ..... .
a. devices b. users c. systems d. all of them

29 Global warming is mainly caused by ..... .
a. carbon dioxide b. oxygen c. water vapor d. nitrogen

30 Baiting may involve offering ..... to attract the victim.

a. food
b. free malware
c. free USB
d. music

2 Put (✓) or (✗):

1 IoT connects different devices to the Internet to exchange data efficiently. ( )

2 Robotics involve machines that can move and perform human-like tasks. ( )

3 Smart homes combine IoT, AI, and robotics to operate efficiently. ( )

4 IoT can turn on the air conditioner automatically when the weather is hot. ( )

5 Interconnected intelligent systems need humans to control every small action. ( )

6 Smart systems can monitor air pollution and suggest solutions to reduce it. ( )

7 Smart farming uses IoT sensors to measure soil moisture and robotics to decide when to water plants. ( )

8 Voice assistants use robotics to respond to users' questions. ( )

9 Global warming is caused by an increase in carbon dioxide emissions. ( )

10 Robots can help during floods by draining water or rescuing people. ( )

11 Advanced cyber threats are simple viruses that only damage hardware. ( )

12 Ransomware encrypts your files and asks for money to unlock them. ( )

13 DDoS attacks are designed to disable websites by sending huge amounts of traffic. ( )

14 Spear phishing targets specific individuals or organizations using personal information. ( )

15 Pretexting is when an attacker pretends to be someone trustworthy to get information. ( )

16 Baiting offers something attractive, such as a free USB drive, to trick victims. ( )

17 Social engineering focuses on hacking the software. ( )

18 Updating antivirus software helps prevent ransomware attacks. ( )

19 DDoS attackers often use a network of infected devices called baiting. ( )

20 Sharing passwords with friends is a safe way to stay protected online. ( )

21 Big data refers to large and complex data that cannot be processed efficiently using Excel. ( )

22 Social media activities such as posts and likes are major sources of big data. ( )

23 Financial data includes payments, banking transactions, and stock trading. ( )

24 Geographic and spatial data are collected using satellites and GPS. ( )

25 The 5Vs of big data are Volume, Velocity, Variety, Veracity, and Value. ( )

26 Variety refers to the usefulness of data for individuals or organizations. ( )

27 Structured data is organized in tables with rows and columns. ( )

28 Veracity means the reliability and accuracy of data. ( )

29 Semi-structured data combines both structured and unstructured elements, such as emails. ( )

30 Unstructured data is easy to analyze using traditional tools like Excel. ( )

Answers

1

1 c	2 b	3 d	4 d
5 a	6 b	7 c	8 a
9 b	10 b	11 c	12 b
13 b	14 b	15 c	16 d
17 d	18 b	19 b	20 d
21 b	22 c	23 d	24 b
25 d	26 b	27 b	28 d
29 a	30 c		

2

1 ✓	2 ✓	3 ✓	4 ✗
5 ✗	6 ✓	7 ✗	8 ✗
9 ✓	10 ✓	11 ✗	12 ✓
13 ✓	14 ✓	15 ✓	16 ✓
17 ✗	18 ✓	19 ✗	20 ✗
21 ✓	22 ✓	23 ✓	24 ✓
25 ✓	26 ✗	27 ✓	28 ✓
29 ✓	30 ✗		